

respectfully request favorable reconsideration of the subject application, particularly in view of the following remarks.

The invention claimed by Applicants is a method and apparatus for determining release rates of volatile contaminants from soils. The apparatus comprises a transparent reactor vessel comprising sealable means for introducing at least one volatile liquid sample into the transparent reactor vessel, at least one sorbent contained within the transparent reactor vessel, and *separation means for preventing direct contact between the at least one sorbent and any soil/NAPL complex present in the transparent reactor vessel*. The separation means permit passage of solvent soluble constituents of the volatile liquid sample to be sorbed by the at least one sorbent. As described beginning at Page 6, line 21 of the specification of the subject application, the apparatus as claimed enables contacting soil with a liquid so as to maintain *a gas headspace volume equivalent to virtually zero percent of the total contents of the reactor vessel* and for employing a sorptive resin for measurement of the contaminant releases from the soil into the liquid phase, e.g. water, of the reactor vessel without direct contact of the resin with the soil solids. Applicants respectfully urge that the prior art relied upon by the Examiner for rejection of the subject application neither teaches nor suggests the invention claimed by Applicants.

Claims 1-6 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Petty et al., U.S. Patent 6,478,961 B2 (hereinafter “the Petty et al. patent”) in view of Devon, U.S. Patent 5,138,101 (hereinafter “the Devon patent”). This rejection is respectfully traversed. The Petty et al. patent teaches a sampling device, shown in Fig. 1, for sequestration and concentration of polar organic chemicals from water. The device includes a sealed *microporous* hydrophilic polymeric membrane enclosure, in which enclosure is contained a mixed sequestration phase capable of transforming dissolved polar organic chemicals into non-mobile (sorbed) species, which accumulate in the device throughout the period of exposure of the device to the contaminated water (Col. 3, lines 41-46). The device 10 comprises two stainless steel washers 12 and 14 and is equipped with threaded studs 16 and wing nuts 18 as a clamping mechanism. The studs 16 and wing nuts 18 clamp washers 12 and 14 together for sealing the perimeters of two membranes, denoted as element 20, disposed between the two stainless steel washers (Col. 6, lines 59-64). The device is deployed in aquatic systems (Col. 5, lines 11-15). Sampling rate is controlled by diffusion of the polar organic chemicals from the ambient water through the pores of the membrane (Col. 5, lines 17-19). That is, contrary to the invention claimed by Applicants in which the separation means permitting passage of solvent soluble constituents to be sorbed by the at least one sorbent are disposed in a

transparent reactor vessel comprising sealable means for introducing at least one volatile liquid sample into the transparent reactor vessel, the device of the Petty et al. patent is deployed in an aquatic system. Nowhere is there any teaching or suggestion by the Petty et al. patent of disposition of the device in a vessel of any type, much less a transparent reactor vessel as claimed by Applicants. Indeed, the Examiner acknowledges that the Petty et al. patent does not specifically teach the use of a transparent reactor vessel or the additional apparatus components of the invention claimed by Applicants. Rather, citing the Devon patent as exemplary thereof, the Examiner argues that the use of a transparent reactor vessel or glass flask including sealing means comprising a septum and a magnetic stirring means are well known in the art of analytical chemistry in performing chemical extraction procedures. Thus, the Examiner argues that it would have been obvious to one of ordinary skill in the art to incorporate the use of the apparatus disclosed by the Devon patent with the extraction system of the Petty et al. patent to arrive at the invention claimed by Applicants. Applicants respectfully disagree.

MPEP § 2141 states:

“When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and *must suggest the desirability and thus the obviousness of making the combination* (emphasis added);

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard with which obviousness is determined.”

The Examiner indicates that “...as evidenced by Devon, a person of ordinary skill in the art would accordingly have had a reasonable expectation for success in utilizing the apparatus for performing extraction procedures. The Courts have held that the prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success.”

Applicants respectfully urge, however, that in addition to a reasonable expectation of success, the references also *must suggest the desirability and thus the obviousness of making the combination*. Applicants respectfully urge that the references do not suggest the desirability of making the combination of teachings and no such desirability or motivation on the part of one skilled in the art has been presented by the Examiner. Indeed, Applicants urge that the “extractions” taught by the Petty et al. patent involve substantially different mechanisms and procedures from the “extractions” taught by the Devon patent - so much so that one skilled in the art would, in fact, see no desirability in combining the teachings of the two references.

In particular, the “extraction” of the Petty et al. patent involves the disposition in contaminated aquatic systems of a sequestering device comprising a sealed *microporous* hydrophilic polymeric membrane enclosure, in which enclosure is contained a mixed sequestration phase capable of transforming dissolved polar organic chemicals into non-mobile (sorbed) species, which accumulate in the device throughout the period of exposure of the device to the contaminated water. That is, the contaminants of interest pass through a microporous membrane of a microporous membrane enclosure into a mixed sequestration phase contained within the enclosure. In contrast thereto, the “extraction” process of the Devon patent involves the equilibration of a particular compound into two separate liquid phases (Col. 11, lines 19-21). In the first step of the extraction process, a hydroformylation product solution is intimately contacted with an extraction solvent comprising a primary alkanol and water to form a 2-phase mixture. In the second step, the mixture is separated to obtain hydroformylation solvent phase containing catalyst components and an alkanol/water phase containing a high boiling aldehyde (Col. 6, lines 4-12). Thus, no membrane separation as taught by the Petty et al. patent is employed in the method of the Devon patent. Accordingly, Applicants respectfully urge that no desirability of combining the teachings of these two references is, in fact, suggested by the references. Thus, Applicants respectfully urge that the Petty et al. patent and the Devon patent, alone

or in combination, do not render Applicants' claimed invention obvious in the manner required by 35 U.S.C. 103(a).

Claims 7-13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al., U.S. Patent 6,591,702 B2 (hereinafter "the Hayes et al. patent") in view of the Petty et al. patent discussed herein above and further in view of Ray et al., U.S. Patent 5,470,535 (hereinafter "the Ray et al. patent"). This rejection is respectfully traversed. The Hayes et al. patent teaches a method for identifying and characterizing contaminated soils and sediments involving subsurface vapor pressure mapping of vapor pressure measurements made at a plurality of subsurface soil sampling locations of a site. Contaminant mobility at the subsurface soil sampling locations having a peak vapor pressure is then determined and contaminants in fast release compartments and slow release compartments in the contaminated soils and sediments identified. Thereafter, the fraction of contaminants in the fast release compartments and the slow release compartments is determined. The Hayes et al. patent is relied upon by the Examiner as teaching the use of a Zero Headspace Extraction vessel for the disclosed method. The Examiner acknowledges, however, that the Hayes et al. patent *does not teach* the use of a separation means or containment means for holding the sorptive resin during use. Rather, the Examiner relies upon the Petty et al. patent as teaching these elements.

As previously stated, the Petty et al. patent teaches a sampling device for sequestration and concentration of polar organic chemicals from water, which device includes a sealed *microporous* hydrophilic polymeric membrane enclosure, in which enclosure is contained a mixed sequestration phase capable of transforming dissolved polar organic chemicals into non-mobile (sorbed) species, which species accumulate in the device throughout the period of exposure of the device to the contaminated water. Also, as previously stated, contrary to the invention claimed by Applicants in which the separation means permitting passage of solvent soluble constituents to be sorbed by the at least one sorbent are disposed in a transparent reactor vessel comprising sealable means for introducing at least one volatile liquid sample into the transparent reactor vessel, the device of the Petty et al. patent is deployed in an aquatic system. Nowhere is there any teaching or suggestion by the Petty et al. patent of disposition of the device in a vessel of any type, much less a transparent reactor vessel as claimed by Applicants.

The Ray et al. patent teaches a piston-type zero headspace extraction device comprising an open-ended cylinder 10 in which a piston 12 is slidable in sealing engagement with the cylinder maintained by sealing rings 14. The upper and lower ends of the cylinder have peripheral lips 16 and 18, respectively, to which a top flange 20 and a bottom flange also respectively, are removably secured by bolts 24

(Col. 4, lines 19-25; Figs. 1-3). Agitation of the device is accomplished by turning the vessel end over end in a rotary agitation apparatus (Col. 4, lines 51-55). The Examiner argues that the combination of the Hayes et al. patent, the Petty et al. patent and the Ray et al. patent teaches all of the recited structure of the apparatus provided in the claimed method, which merely recites the conventional operation of the apparatus, based upon which the Examiner concludes that it would have been obvious to one of ordinary skill in the art to perform the method recited in the instant claims upon the apparatus of the Hayes et al. patent, the Petty et al. patent and the Ray et al. patent, as such is the intended operation of the apparatus. Applicants respectfully disagree.

As previously indicated, MPEP § 2141 requires that the references be considered as a whole and that they *suggest the desirability and thus the obviousness of making the combination*. Applicants respectfully urge that the references in question, namely the Hayes et al. patent, the Petty et al. patent and the Ray et al. patent, do not suggest the desirability of making the combination of teachings and no such desirability or motivation on the part of one skilled in the art has been presented by the Examiner. In particular, Applicants respectfully urge that there is no desirability or motivation suggested for incorporating the device of the Petty et al. patent into the Zero Headspace Extraction devices of the Hayes et al. patent and the

Ray et al. patent, absent which Applicants respectfully urge that it would not be obvious to one of ordinary skill in the art to incorporate the device of the Petty et al. patent into the Zero Headspace Extraction devices of the Hayes et al. patent and the Ray et al. patent.

Applicants further respectfully urge that the mechanisms of operation of the device of the Petty et al. patent and the Zero Headspace Extraction devices of the Hayes et al. patent and the Ray et al. patent are sufficiently different such that one of ordinary skill in the art would not be motivated to combine the teachings of the cited references to arrive at Applicants' claimed invention. In particular, in the device of the Petty et al. patent, the separation from the water of the polar organic chemicals in the water undergoing sampling is achieved by flow of the polar organic chemicals into the enclosure formed by the microporous membranes. In the Zero Headspace Extraction devices of the Hayes et al. patent and the Ray et al. patent, separation of contaminants from a soil sample is accomplished by activation of a piston which forces the contaminants through a filter, during which or after which the filtrate is removed from the devices. If one skilled in the art were to combine the teachings of the Petty et al. patent, the Hayes et al. patent and the Ray et al. patent, the resulting device would be a piston driven device in which the sampling device of the Petty et al. patent is disposed, thereby providing competing means for contaminant separation

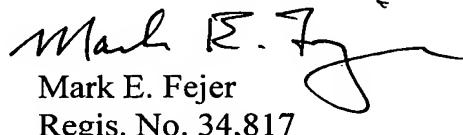
and removal. Accordingly, Applicants respectfully urge that the Hayes et al. patent, the Petty et al. patent and the Ray et al. patent, alone or in combination, neither teach nor suggest the method of the invention claimed by Applicants and, thus, do not render Applicants' claimed invention obvious in the manner required by 35 U.S.C. 103(a).

**Conclusion**

Applicants intend to be fully responsive to the outstanding Office Action. If the Examiner detects any issue which the Examiner believes Applicants have not addressed in this response, Applicants urge the Examiner to contact the undersigned.

Applicants sincerely believe that this patent application is now in condition for allowance and, thus, respectfully request early allowance.

Respectfully submitted,

  
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